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FUEL CELL SYSTEM BACK-PRESSURE CONTROL WITH A DISCRETE VALVE

ABSTRACT OF THE DISCLOSURE

A fuel cell system that employs a two-position valve at the cathode exhaust gas output for controlling the pressure within the fuel cell stack to control the stack relative humidity. In one embodiment, the two-position valve is switchable between a fully open and a fully closed position, where the valve is opened when the fuel cell system is operating at a low operation temperature and the valve is closed when the fuel cell system is operating at a high operation temperature. A fixed restriction valve is provided in parallel with the two-position valve so that when the two-position valve is fully closed, the proper amount of pressure is provided at the cathode output. In another embodiment, the two-position valve employs sized leak paths so that when the two-position valve is in the closed position, the cathode exhaust gas can still flow through.